

**AMENDMENTS TO THE CLAIMS**

1. **(Currently Amended)** A method for analyzing interactions, comprising the steps of:

introducing into a separation channel a first solution comprising a substance to be analyzed that is eluted from the separation channel faster, and a second solution comprising a substance to be analyzed that is eluted from the separation channel more slowly, wherein at least a portion of the first solution is introduced into the separation channel after introducing at least a portion of the second solution thereinto; and

detecting generating a chromatogram of the substances eluted from the separation channel with a mass spectrometry detector, and

comparing the generated chromatogram with a chromatogram of the substance comprised in the first solution and/or the substance comprised in the second solution without any interaction with other substances to be analyzed, wherein a determination that there exists an interaction between the substance comprised in the first solution and the substance comprised in the second solution is made, when there is a difference between the chromatograms.

2. **(Canceled)**

3. **(Currently Amended)** The method for analyzing interactions according to claim 1, wherein the separation channel is composed of at least one chromatography selected from the group consisting of size exclusion chromatography, ion exchange chromatography, affinity chromatography, adsorption chromatography, hydrophobic chromatography, hydroxyapatite chromatography, and metal chelate chromatography, ~~an electrophoresis tube and an electroosmotic flow tube.~~

4. **(Canceled)**

5. **(Original)** The method for analyzing interactions according to claim 1, wherein the first solution and/or the second solution comprise a plurality of substances to be analyzed.

6. (Canceled)

7. (Currently amended) The method for analyzing interactions according to claim 1, wherein the first solution and/or the second solution comprise a plurality of substances to be analyzed, and a multiplex chromatogram of the plurality of the substances are ~~detected~~ generated.

8. (Original) The method for analyzing interactions according to claim 1, wherein the first solution and the second solution are introduced into the separation channel in different amounts.

9. (Original) The method for analyzing interactions according to claim 1, wherein the second solution is introduced into the separation channel in an amount twice or more the amount of the first solution.

10. (Original) The method for analyzing interactions according to claim 1, wherein the step of introducing at least a portion of the first solution into the separation channel after introducing at least a portion of the second solution thereinto comprises introducing a gaseous or liquid spatial sample after the introduction of the second solution and before the introduction of the first solution.

11. (Original) The method for analyzing interactions according to claim 1, wherein the first solution and/or the second solution consist of a plurality of solution samples, and the plurality of solution samples are introduced continuously.

12. (Currently Amended) The method for analyzing interactions according to claim 1, wherein the separation channel consists of [[n]] 2 stages (n  $\geq$  2, integer), and a step of introducing a fraction eluted from an (m-1)<sup>th</sup> a first stage (2  $\leq$  m  $\leq$  n, integer) of the separation channel into an m<sup>th</sup> a second stage of the separation channel is repeated from m=2 until m=n, and

the step of detecting generating a chromatogram comprises detecting a chromatogram of a substance to be analyzed eluted from an n<sup>th</sup> the second stage of the separation channel.

13. (Currently Amended) The method for analyzing interactions according to claim 12, wherein

when the fraction eluted from the  $(m-1)^{\text{th}}$  first stage of the separation channel contains the substance comprised in the first solution, the fraction is introduced into the  $m^{\text{th}}$  second stage of the separation channel after the introduction of the second solution, and

when the fraction eluted from the  $(m-1)^{\text{th}}$  first stage of the separation channel contains the substance comprised in the second solution, the fraction is introduced into the  $m^{\text{th}}$  second stage of the separation channel before the introduction of the first solution.

14. (Currently Amended) The method for analyzing interactions according to claim 12, wherein

when the fractions eluted from the  $(m-1)^{\text{th}}$  first stage of the separation channel contain the substance comprised in the first solution, the fractions are introduced into the  $m^{\text{th}}$  second stage of the separation channel during when the second solution is introduced into the  $m^{\text{th}}$  second stage of the separation channel at predetermined intervals, and

when the fractions eluted from the  $(m-1)^{\text{th}}$  first stage of the separation channel contain the substance comprised in the second solution, the fractions are introduced into the  $m^{\text{th}}$  second stage of the separation channel during when the first solution is introduced into the  $m^{\text{th}}$  second stage of the separation channel at predetermined intervals.

15. (Original) The method for analyzing interactions according to claim 1, wherein the step of introducing at least a portion of the first solution into the separation channel after introducing at least a portion of the second solution thereinto comprises introducing the first solution and the second solution in an amount of  $10\mu\text{L}$  or less respectively.

16. (Original) The method for analyzing interactions according to claim 1, wherein the step of introducing at least a portion of the first solution into the separation channel after introducing at

least a portion of the second solution thereinto comprises introducing the first solution and the second solution into an amount of 3  $\mu$ L or less respectively.

**17. (Currently Amended)** An apparatus for analyzing interactions, wherein the apparatus comprises:

a separation device which has a separation channel to separate and elute substances comprised in a solution;

a mass spectrometry detector for detecting the eluted substances from the separation device;

a container section which has first solutions comprising substances that are eluted from the separation channel faster and second solutions comprising substances that are eluted from the separation channel more slowly;

an introduction device to introduce at least a portion of the first solution from the container section into the separation channel after introducing at least a portion of the second solution thereinto; and

a control device to control operation of at least the introduction device,

wherein the control device controls the introduction device to introduce the second solution and the first solution into the separation channel in this order.

**18. (Canceled)**

**19. (Currently Amended)** The apparatus for analyzing interactions according to claim 17, wherein the separation device has at least one chromatography selected from the group consisting of a size exclusion chromatography, an ion exchange chromatography, an affinity chromatography, an adsorption chromatography, a hydrophobic chromatography, and a hydroxyapatite chromatography, ~~a metal chelate chromatography, an electrophoresis tube device, and an electroosmotic flow tube device.~~

**20. (Canceled)**

21. (Original) The apparatus for analyzing interactions according to claim 17, wherein the control device controls the introduction device to introduce a gaseous or liquid spatial sample after the introduction of the second solution and before the introduction of the first solution.

22. (Original) The apparatus for analyzing interactions according to claim 17, wherein the container section has a plurality of first solutions and/or a plurality of second solutions.

23. (**Currently Amended**) The apparatus for analyzing interactions according to claim 17, wherein

the separation device comprises a separation channels channel consisting of [[n]] 2 stages ( $n \geq 2$ , integer), and

the control device controls the introduction device so that a step of introducing fractions eluted from an (m-1)<sup>th</sup> a first stage ( $2 \leq m \leq n$ , integer) of the separation channel into an m<sup>th</sup> a second stage of the separation channel is repeated from  $m=2$  until  $m=n$ .

24. (**Currently Amended**) The apparatus for analyzing interactions according to claim 23, wherein the control device controls the introduction device so that when the fractions eluted from the (m-1)<sup>th</sup> first stage of the separation channel contain the substance comprised in the first solution, the fractions are introduced into the m<sup>th</sup> second stage of the separation channel after the introduction of the second solution, and when the fractions eluted from the (m-1)<sup>th</sup> first stage of the separation channel contain the substance comprised in the second solution, the fractions are introduced into the m<sup>th</sup> second stage of the separation channel before the introduction of the first solution.

25. (**Currently Amended**) The apparatus for analyzing interactions according to claim 23, wherein the control device controls the introduction device so that when the fractions eluted from the (m-1)<sup>th</sup> first stage of the separation channel contain the substance comprised in the first solution, the fractions are introduced into the m<sup>th</sup> second stage of the separation channel during

when the second solution is introduced into the  $m^{\text{th}}$  second stage of the separation channel at predetermined intervals, and

when the fractions eluted from the  $(m-1)^{\text{th}}$  first stage of the separation channel contain the substance comprised in the second solution, the fractions are introduced into the  $m^{\text{th}}$  second stage of the separation channel during when the first solution is introduced into the  $m^{\text{th}}$  second stage of the separation channel at predetermined intervals.

26. (Original) The apparatus for analyzing interactions according to claim 17, wherein the first solution and the second solution are introduced into an amount of 10  $\mu\text{L}$  or less respectively.

27. (Original) The apparatus for analyzing interactions according to claim 17, wherein the first solution and the second solution are introduced into an amount of 3  $\mu\text{L}$  or less respectively.

28. (**New**) The method for analyzing interactions according to claim 1, wherein the substance to be analyzed in the first solution passes over the substance to be analyzed in the second solution.